

Vande Warker (Ely)

Reprinted from the AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF
WOMEN AND CHILDREN, Vol. XVII., No. III., March, 1884.

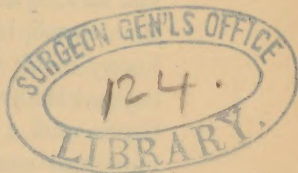
A NEW METHOD
OF
PARTIAL EXTIRPATION OF THE CANCEROUS UTERUS.

BY

ELY VAN DE WARKER, M.D.,

Syracuse, N. Y.

With six woodcuts.



THE history of the surgery of women teaches us that success has followed failure only as the result of wise and careful experiment. Our lesson from this is that, however discouraging the surgical treatment of malignant disease of the uterus may be, fortune may have in store for it a future of better promise. We are, therefore, encouraged to enter the field with new methods, and to go on accumulating experience.

I have had, in common with every physician, the usual experience in the treatment of these cases. It is needless to review this, but from the present status of the surgery of this disease we may learn something. At this period the treatment is narrowed down to three methods: total extirpation of the uterus through the vagina, vaginal amputation with supra-vaginal excision, and my own method of potent chemical cautery. The first is a method attended with such a ratio of direct fatality and with such mechanical difficulties in the way of its performance that ovariectomy is safe and simple in comparison.

The second is simply a survival of the antique. To the surgeon who hopes to gain a more or less permanent arrest of the ingrowth of malignant uterine disease by amputating the cervix and an excision of the tissue of the organ to the os internum, the past has taught but little. There is a period in the course of malignant invasion when the disease is a simple focus. If this stage could be detected with certainty, and at the critical movement this focus eradicated, the knife, or the écraseur, or the galvano-cautery would show a better record. Let us conceive further that this beginning focus has extended through a wider zone, but within limits well defined by the palpable vaginal portion; here again these older procedures would give possibly immunity for years from the advance of the disease, if not a radical cure. But my experience has been that when the disease has passed above the vaginal junction, amputation and uterine excision, no matter how thorough, was useless to stay the disease, but when confined to the vaginal portion such a happy result was possible because the operation had extended beyond the frontier of malignant action into absolutely healthy tissue, and a disease yet purely local, but potentially malignant, was completely extirpated.

We all know how rare it is to see these cases while the disease is thus limited. I may say that I have never seen a case in this primary and fortunate stage for simple removal; that other surgeons have, I think, is proven by the rare instances of apparent cure.

In this direction I claim that surgery by the knife has reached its limits. We ought to look for no better results in total uterine extirpation than in total mammary extirpation, and the figures so far as they have gone prove this. The difficulties of this operation, and its fatalities which equal a third of the recoveries, are encountered for what, in every case of uterine carcinoma, is simply an experiment with the laws of chances combined against it, for by no means of examination yet known can one assure himself that nodes of cancerous infection do not exist in the parametrium which would defeat every effort for removal. Amputation of the cervix by the knife and scissors, the galvano-cautery, the gas cautery, the local application of caustics to the cervix, be they bromine, fuming nitric acid, or any chemical of equal potency, the application of styptics, or

alteratives are only mentioned as measures that are worse than useless and ought in our present knowledge of the subject to be abandoned. In view of this I believe I am justified in saying that the knife has reached its ultimate limits, and if we are to advance further in treatment equally radical it must be in other directions.

Dr. Sims, in an article in the *AMERICAN JOURNAL OF OBSTETRICS*,¹ speaking of a noted empiric, says in his usual candid way, "He taught the profession this truth, which we would not accept from such a source, that better and more permanent results followed the use of caustics, and a consequent sloughing, than followed the use of the knife with healing by the first intention." I began the use of caustics nearly ten years ago, but my experience was such that I abandoned the plan, and for several years did nothing for these cases. My plan was to amputate the cervix and excise into the body of the uterus as far as I could go with the knife and scissors, and then complete the operation by burning out the excavation with the actual cautery, or, when that instrument came into more general use, with the bulb of a Pacquelin gas cautery. I worked through a Sims' speculum and protected the anterior vaginal wall with thin pieces of wood. I cauterized freely, stopping several times to let the cavity cool, as it would get so hot I could not hold my finger in it. But, as I said, I abandoned the method after an experience of several cases. I learned one thing, however, that has been of use to me since. No matter how thorough I might be in the use of the actual cautery, the slough that resulted was extremely thin, the cautery had no power of penetration, as the eschar, too quickly formed, protected the deeper tissues. I was convinced that while cautery was the method that ought to be employed, the actual cautery was not the agent, but I did not see my way to any other form.

Here the matter rested until I read Dr. Sims' article. I was then encouraged to go on after his method, and operated in several cases. It was better than anything I had yet tried, but on the whole was a failure. Several months of loathsome discharge and loss of blood were saved to the patient, but no real arrest was given to the disease. The slough that resulted

¹ Vol. xii., p. 451.

from the use of the chloride of zinc solution of the strength prescribed by Dr. Sims (3 v. ad $\frac{3}{4}$ i.), was very thin, rarely exceeding one-sixteenth of an inch in thickness, showing that we were yet working upon the surface, and were without the power of penetrating into the depths, much less through the zone of malignant action. The idea occurred to me to apply to the uterus caustics of a power to give the same depth of slough that we would operate with on a cancerous breast. Instead of producing a slough of a quarter of an inch, why not slough out nearly the whole uterus if necessary? And this I believe we may do as safely as we would the whole mammary gland.

To the late Dr. Sims belongs the credit of teaching us how to apply a caustic solution on pledgets of absorbent cotton, literally wrung dry of superfluous fluid, a method that is equally applicable to any watery caustic solution. Thus we have the means of applying these potent agents with the certainty and accuracy of the knife. I am not aware that any one can dispute this simple and efficient device with Dr. Sims.

I make my operation as follows:

The first step consists in amputation of the cervix uteri up to the vaginal junction. The cervix is seized in some portion of its periphery where the tissue is sufficiently firm to hold, with a double vulsellum, and the part cut away with a scissors curved on the flat. If the part is very indurated and thick, a knife with a suitable handle is the better instrument. From this point the tissue of the cervix is excised, usually as high as the os internum, in the form of an irregular triangle, with the base at the vaginal junction. We may do this with either the knife, scissors, or curette, whichever is most convenient. In case the tissues in the cavity of the cervix are very friable, a curette will answer every purpose. With this instrument we may follow the spongy tissue down into depressions of the firmer parts, and then using the scissors, smoothe off the irregularities to a general level. In case of considerable depth of indurated tissue in the cervical cavity, a knife that may be placed at different angles is necessary. Hemorrhage has never given me any serious trouble at this stage. In several cases there has been free loss of blood, which ceased as soon as the cavity was thoroughly cleaned out.

I believe that in the majority of cases packing the excavation, after the manner of Sims, with iron cotton as a precaution against hemorrhage, is not necessary, and that we might proceed at once to the second step of the operation, as the zinc solution is in itself a powerful astringent. In two instances I did so, but it appeared that the application of the caustic was more painful and the resulting slough was not so thick as when preceded by a packing of the subsulphate of iron solution. A further experience is necessary to confirm this; but it seems a reasonable explanation that the sensibility of the surface would be lessened by both the pressure of the cotton packing and the effect of the powerful astringent upon the severed nerve fibres and capillary-vessels, while the chemically hardened surface would permit a deeper penetration of the caustic solution, as in histological work a properly hardened preparation will select and take a stain better than a fresh.

With these two exceptions I have always packed with the iron cotton, one of subsulphate solution to three of water. I cannot help regarding it as one of the steps of the operation requiring the greatest care and as not without danger. The directions given by Dr. Sims for the prompt removal of the cotton on the first suspicion of blood-poisoning must be carefully followed. He also reports two cases in which the thinned and weakened uterine wall was ruptured by too great force used in introducing the cotton. When I have seen how thin we may wear down parts of the uterine wall by using the curette, another explanation of this occurs to me; that the thin and friable uterine shell may, under the powerful influence of the astringent, give way at its weakened point from the shrinkage of the walls over the unyielding mass of cotton. I pack the uterus with masses of absorbent cotton about the size of a chestnut, wrung nearly dry from the iron solution, made of one part of subsulphate of iron to three of water. I find that if the cotton is used in small, separate masses, the cavity may be packed without the use of any force, as larger or smaller pieces may be chinked in where they are needed. In removing the iron dressing, these small pieces may be taken away separately with much less force than large. Very little packing is required in the vagina, as the iron cotton keeps its place very firmly, while filling the vagina adds very much to the discom-

fort of the patient and prevents the free action of the bladder. The use of carbolized or aseptic cotton in the vagina in no way prevents decomposition, as it is placed where it can do no good. We can, in a measure, avoid blood-poisoning, which is so liable to follow the decomposition of blood-clots saturated with iron, by carefully removing all clots from the uterine excavation, and if we find the blood oozing from between the masses of cotton, remove all the dressing and repack, rather than insure against hemorrhage by imprisoning the exuded blood by packing the vagina, as the blood is sure to decompose and prove the source of a vile odor, if not of absolute danger.

The dressing ought to be removed by the second day. This I can do more readily with a tenaculum with a short, right-angled hook than with Dr. Sims' cork-screw instrument. As mentioned above, here the chief advantage arises of using small masses of the iron cotton, as each one may be caught up on the tenaculum, and removed separately without any force. The patient should be placed upon the table in a good light, as the vagina will be found discolored by the iron, and very much contracted. When the vagina and uterine excavation is properly cleaned out, the patient is ready for the real operation, compared to which all that has gone before is subsidiary and of minor importance. The reader is entitled to object, if it is of so little consequence to the real purpose of this method, why do it? It is done for various reasons. First. That we may make an excavation in which to pack our caustic; secondly, to remove as much of the diseased material as possible by a rapid operation; and thus, thirdly, to save time. The operation I have just described is more radical than that usually made for epithelioma of the neck. It is not rare to find that the greater part of the supra-vaginal cervix has been shelled out, leaving a thin-walled cavity reaching to nearly the os internum.

I make use of two strengths of the zinc chloride solution, one of 3 v. to the ounce of water, and one of equal parts of the chloride and of water, by weight. Before proceeding to pack with the caustic cotton, I have everything prepared. The zinc solutions, about an ounce of each, in salt mouth bottles, marked so that there may be no doubt which is the stronger. A pomade of bicarbonate of soda in vaseline, about

one to three, and a thirty-per-cent solution of the same salt in a goblet. An assistant accustomed to hold a Sims speculum is very necessary. After the dressing of iron cotton is removed, I clean and dry the vagina and excavation with absorbent cotton, and then carefully protect the labia and vagina with the pomade of bicarbonate. This is important, as the comfort of the patient for two weeks or so depends upon protecting the labia, and, especially, the urinary meatus, from the action of the caustic. I have found these parts the seat of slight sloughs after I had exercised the greatest care to protect them. Since using the vaseline pomade, I have had no further trouble. The question now comes up, How are we to determine whether we will use the weak or one-hundred per-cent solution? I determine this point at the completion of the preliminary operation. By introducing a blunt sound to the fundus of the bladder, and with the finger passed into the uterine excavation, I endeavor to feel the sound through the intervening part, and thus estimate the amount of tissue left for the caustic to act upon. (Case III.) The posterior relations of the cavity I judge of in like manner, by passing the sound into the uterine excavation, and with a finger in the rectum, if the interlying part is very thin, the sound may be felt. It is better to do this before the excavation is hardened and contracted by the iron. If, then, we have approached quite near the surface of the uterus, so that a slough in excess of a quarter of an inch in thickness is liable to result in perforation, it is prudent to use the weak solution after the upper and thicker-walled parts of the excavation have been packed with the strong solution. If the vaginal wall was involved and worked down with the curette, it is possibly better to use the weaker mixture for fear of perforating into the bladder or rectum, although I have applied the one-hundred-per-cent solution upon the vagina without accident. (Case II.) Usually, we need not hesitate to expose the surface operated upon to the full strength of the caustic. After the packing is completed, the surface of the zinc cotton and about an inch of the upper vagina is filled with absorbent cotton saturated with the bicarbonate of soda solution, by which any of the chloride of zinc that may filter out is decomposed.

In some instances, the pain is not severe. One or two full

doses of morphia, hypodermically, are sufficient to bridge over the period of pain, which usually does not exceed ten hours. In about two or three days, we may remove the cotton from the vagina, and, if we can do so without force, from the uterine excavation. If the zinc dressing is thoroughly cemented down, it is better to wait a day or two longer. When it is removed, a white, firm, cement-like surface, which is the slough firmly adherent to the excavation, is brought into view. The slough will separate in from five to ten days. No force at any time should be used to detach the slough, but it must be allowed to exfoliate spontaneously. If the one-hundred-per-cent chloride solution has been used, it is thrown off in a single piece, an exact cast of the cavity. There is no danger of blood-poisoning during this stage, as the chloride is a perfect disinfectant. While the slough is separating, we may aid the process by a free douche of carbolic acid solution, and which may be continued during the granulation process.

It is during the sloughing stage that we may be annoyed by hemorrhage. I guard against it by confining the bowels for four or five days, as then there will be no cause for expulsive effort upon the bed-pan. The patient is cautioned against sitting up in bed or making any considerable effort to help herself. It is better to empty the bladder through the catheter at this time, as patients get to be very careless if allowed to help themselves. On several occasions, I have seen hemorrhage follow directly after using the douche. This, I think, was owing to the force of the current into the excavation. None but the gentlest stream must be used, and, if hemorrhage should follow, stop the injection for a day or two. My experience is not sufficient to state it for a fact, but it is a fact, so far as it goes, that in cases in which the destruction by the caustic of the muscular tissue of the uterus has been extensive, there has been less hemorrhage than in cases in which a considerable part of the substance of the organ was intact. In one case, in which I had reason to believe, from the shape and quantity of the slough and the depth and breadth of the excavation, that the entire uterus had been shelled out of its peritoneal envelope, there was only a slight hemorrhage on the sixth day caused by the patient getting up and sitting upon the commode. The hemorrhage ceased spontaneously. I have

never been obliged to pack the vagina to arrest hemorrhage. An injection of a weak subsulphate of iron solution has always promptly arrested it. It is not a good form of astringent to use, however, as the bed is liable to be damaged. Vinegar or a solution of alum would be just as efficient, and without this disadvantage. The use of vinegar would not constrict the vagina, and thus allow one to pack in case this became necessary—a very difficult thing to do after an iron injection.

Cicatrization is completed in from two to four weeks, leaving a greatly contracted cavity lined by a pale, soft, velvety membrane free from odor or discharge. The cavity continues to contract for some time after the granulation process is completed (Case II., Fig. 6). Contractions such as this would follow no agent other than a caustic. It is an endowment of cicatricial tissue from this cause to undergo this progressive shrinkage as the deformities from severe burns prove.

The following cases will illustrate practically the various steps of the operation.

CASE I.—Mrs. B., widow, of Oneida, N. Y., forty-nine years old, the mother of three children, the youngest twenty-five. First menstruated at thirteen years and passed change of life at forty-five. Always enjoyed good health, but was never robust. Early in November, 1882, she was brought to me by her physician, Dr. Cragin. For six months previously she had noticed an offensive discharge with considerable itching and irritation of the labia, with a rapid decline in strength and flesh. For last two months she had been losing blood from the vagina, at times quite freely. Some sacralgia, but otherwise quite free from pain. An examination showed that a friable mass the size of a hen's egg was attached to nearly the entire periphery of the vaginal cervix, anterior to which a trace of the cervix could be felt intact. The growth extended downward for nearly an inch upon the posterior vaginal wall. The serious nature of the disease was stated to her friends to whom I explained what I proposed to do to arrest it if possible. The patient consenting, she was admitted to my private hospital and on Nov. 11th, assisted by Drs. Cragin, Stanton, and Miss F. A. Adams, medical student, the mass was removed up to the solid line *a*, Fig. 1, by the scissors and curette. The excavation was packed with iron cotton, which was removed in two days and the caustic cotton, one-hundred-per-cent solution, was applied. There was very little pain, a single hypodermic injection of ten minims of Magendie's solution being all that was required. On the seventh day from the application of the caustic the slough shown in Fig. 2 was found lying in the vagina. It was firm, white, and perfectly free from odor.

From an examination of Fig. 1, it appears as though the point *c* on the posterior wall of the vagina was especially liable to perforation, as the curette had already made the part exceedingly thin, and in packing it was exposed to the full strength of the caustic; but it did not occur, and in fact at this point the slough was about one-fourth the thickness of that in the excavation of the uterus. The explanation of this is, to me, very simple. The degenerated tissue of the epithelioma is of a low grade of vitality, and can offer no resistance to a chemical caustic; on the contrary, normal surfaces stand at

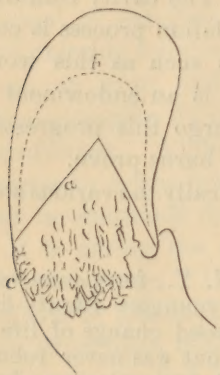


FIG. 1.

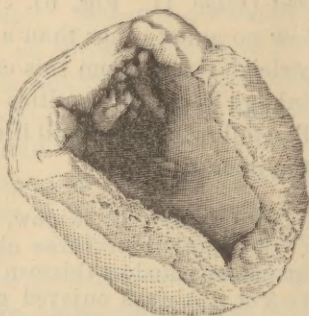


FIG. 2.

the opposite pole of resistance, and further, the inflammation excited in it by the cautery opposes a wall of hyperplastic tissue to its further invasion. Thus the caustic action was limited at this point, and throughout the uterus. In my former work I have observed this: under the action of the actual cautery we lose this advantage, normal and diseased tissue being destroyed to the same extent, the eschar giving equal protection to each. The dotted line *b*, Fig. 1, represents as near as I could measure it at the time, the limit of the destruction of the uterine tissue. The size of the slough shown in Fig. 2, which is from a ferrotype, actual size by measurement, will enable the reader to estimate how nearly correct the line *b*, Fig. 1, is. The photograph was taken after it had been some time in strong spirits by mistake, which had caused considerable shrinkage. All the lower portion is cut away, the specimen figured representing the part that corresponded to the fundus uteri. If we

compare the size of the slough to that of the normal uterus, and allow for the amount of tissue removed at the preliminary operation, the conclusion seems inevitable that in this case the entire uterus was sloughed out of its peritoneal covering. This had been done without damage to near parts, high temperature, or severe pain.

The specimen shown in the figure has been further studied. Careful microscopic sections have been made by Dr. A. C. Mercer. Fig. 3 is a drawing from one of these, stained with logwood and mounted in Canada balsam. The margin *a* corresponds with the outer, convex surface of the slough, and *b* with the inner surface or cavity. It therefore represents a transverse section of the uterus a little above the level of the os internum. From it we may learn something of the process by which the caustic works. It destroys vitality, but does not disintegrate. Each histological element is preserved intact in its exact relations, hardened and fixed as though it had been prepared for microscopic section in a solution of chromic acid and spirits. The chloride has the power of penetrating the debased tissue of the epithelioma just as one histological element has the power of selecting one stain and rejecting another, it then destroys the vitality of the part by coagulating and solidifying its fluids by its marked affinity for water. The chloride would affect normal tissue to the same extent and manner if by simple contact it could penetrate with equal facility. When brought in contact with normal tissue it excites inflammation of sufficient high grade to form a line of demarcation, and at which point separation occurs between the healthy and necrosed portions. I have compared this selective power of the chloride to double staining in histology which served as a figure to illustrate the process, but of course it could not be used as an actual explanation of what goes on in vital tissues, one normal and the other undergoing retrogression. The vital action must be nearly this: The chloride excites inflammation through the cancerous tissue, but of a low, non-resisting grade, like the low, sluggish inflammation that keeps just in advance of the march of senile gangrene, and the local death is not arrested until a line of high grade inflammation is reached capable of interposing a margin of hyperplastic tissue. In the case before us, the figure shows a line

of demarcation as sharply defined as though made by a knife. If we divide a carcinoma of the uterus into the three zones of Hart and Barbour,¹ we have, first, a layer in the process of breaking down; second, a zone of purely malignant tissue intact; and third, one of normal tissue more or less invaded by the debased cellular elements of the disease (advancing carcinoma). An examination of the section shows us what has taken place.



FIG. 3.

Beginning at *b*, Fig. 3, we are at the point where the preliminary operation ended, and the caustic action began. That is, I had passed through the first zone and into the second, and the chloride solution had penetrated the remnant of the second, through the third zone into, slightly, the underlying normal tissue. We see in the cut the second zone with its profusion of cell growth and its scanty connective and muscular elements terminating somewhat abruptly at *c*, where we have a beginning

¹ Manual of Gynecology, p. 449.

normal connective and muscular tissue sparsely infiltrated with cells, terminating at *a* in normal structure.

Mrs. B. is at this date, January 18th, 1884, free from disease.

CASE II.—Mrs. P., forty-five years, one child twenty-six years. She ceased to menstruate at forty-four years. An excitable and nervous brunette. For about a year previous to seeing her, she had noticed an offensive brownish discharge, and latterly an occasional small hemorrhage. An examination showed the uterus in a state of fixation, the cervix gone quite up to the vaginal junction, and leading up into the cavity of the cervix a ragged excavation, nearly an inch in diameter, and over an inch in depth, which bled freely.

On Feb. 19th, 1883, assisted by Dr. Stanton and F. A. Adams, I removed, by the scissors, the remnants of the vaginal portion, and cleaned out the cavity with a sharp curette. The walls were very friable, and in a short time I had an extensive excavation before me. While using the curette well up on the anterior wall of the cervix, I observed I was getting dangerously near the bladder. I laid aside the instrument, and introducing a sound into the bladder, I used my finger-nail to break down the tissue. It was evident I was working my way through a deep cavity upon the sound. My fears were confirmed by a slight gush of bloody water into the vagina. I stopped work in this direction, in some alarm, but completed the operation upon the remainder of the cavity in a very thorough manner. The uterus was packed with the iron cotton, which I removed on the second day. In the interval, I determined upon the course I should follow. As it seemed evident, whatever I might do, I could not place the woman in a more desperate condition, I determined to proceed with the use of the caustic, in the hope that by the resulting contraction, which I had a reason to expect in the repair process, the opening into the bladder would be nearly, if not quite, closed. I used the one-hundred-per-cent solution of the chloride. The patient, who was very intolerant of pain and accustomed to the free use of morphia, made no more complaint than usual. On the 27th, she had a spurt of hemorrhage, while upon the commode, as she insisted upon getting up, but it ceased in a few minutes spontaneously. As the urine escaped from the vagina, a catheter was retained in the bladder, through which all the urine came. On March 4th, an enormous slough came away without any force being used. Granulation proceeded very rapidly, and at the time she left the city, near the end of April, about all the urine came through the urethra when sitting up, and when lying, she could retain the urine over an hour. I saw her for the last time at her home at Jamesville, under the care of Dr. Knapp. The vagina ended in a small cul-de-sac, and was pale and soft.

As this case demonstrates what we may do with the potent

caustic in a case so desperate that it was clear no other means could have been employed to give even a temporary relief, it appears worthy of illustration.

Fig. 4 shows the general condition of the parts at the completion of both operations. The solid line *a* defines the limits of the work with the curette, with the opening *b* into the bladder, which is shown collapsed at *d*; *e* is the opening of the urethra, *v* is the vagina also collapsed, *r* is the anterior rectal wall.¹ The dotted line *c* represents the extent of the excavation after the separation of the slough. It may appear to the reader an exaggeration, but if he will compare the engraving of the slough, after a ferrotype, actual size, it will be seen that



FIG. 4.

I have in no way magnified the dimensions of the cavity from which it was cast off.

The slough, Fig. 5, has retained the shape of the uterine cavity. It would have been a very beautiful specimen if the lower portion had not been injured by the action of the urine. It was laid open at its upper part, and shows its thickness at *A*.

Figure 6 exhibits the size and shape of the upper vagina, and what was left of the uterine cavity *a*. Located somewhere at *b*, was a minute opening into the bladder. The cut gives

¹ The profile is copied from Hart, "Structural Anat. Female Pelvic Floor," Pl. ii., Edinb., 1880.

no more than a correct idea of the enormous contraction that attended the repair process. The surface was smooth, soft, and pale. For several months previous to the operation, it was difficult to feed the patient. She suffered extreme pain throughout the abdomen and down the limbs, for the relief of which she was taking daily a large amount of morphia. The pain continued to the last, especially through the abdomen. Her



FIG. 5.

nutrition in no way improved, and latterly was seriously impaired by obstinate vomiting. She died exhausted about the middle of September, 1883. To the last, there was no return of the disease in the vagina, but I am satisfied that it had in-

vaded some of the abdominal organs. I believe that the operation materially prolonged her life, kept her clean and free from odor, and saved her and her friends all the disgust and misery that attend the last stages of uterine cancer.

CASE III.—Mrs. W., aged sixty-one years. Has had seven children, the oldest thirty-eight, and the youngest twenty years. Early in fall of 1882, had bloody discharge and pelvic pain and fulness. She was brought to me by her physician, Dr. A. K. Hale, of Adams, Jefferson County, N. Y., and admitted into my private hospital. An examination showed the vaginal portion somewhat enlarged, but not indurated, the margins of the os externum showing friable tissue, for a depth of about three-eighths of an inch, upon the external surface. The diagnosis of malignancy was made, and on August 26th, 1883, aided by my usual assistants, and in the presence of

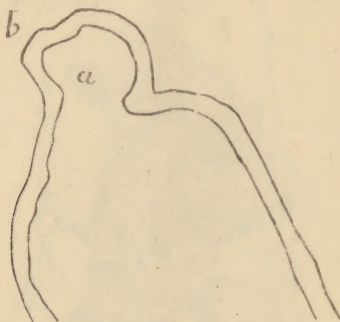


FIG. 6.

Dr. Hale, the vaginal portion was scissored away and the curette freely applied to the cavity of the cervix and body. What appeared before operation a very simple, was now seen to be a very serious case. A large share of the cervix broke down under the curette to a point above the os internum. The anterior wall of the cavity of the cervix was entirely scraped away, the curette passing into the connective tissue between the uterus and bladder. The cavity was packed with iron cotton, which was removed the following day, and the caustic applied, the upper portion being packed with the one-hundred-per-cent zinc cotton, while the perforated portion of the cervix was filled with packing of the weaker solution. While the slough was separating, several hemorrhages occurred, which always followed the douche. In all other respects, Mrs. W. did very nicely and made a rapid recovery. She is reported by Dr. Hale as still well.

These cases illustrate all of the descriptive portions of this paper. They serve to demonstrate what may be done with potent caustics applied on cotton. I believe that further ex-

periment with this agent will develop a new field in pelvic surgery. I feel assured in saying that no other method yet suggested or tried is equally thorough and radical, except total extirpation of the uterus.

